

## REMARKS

Applicants have amended claim 1 in accordance with the examiner's suggestions. Additionally applicants have restricted the temperature between steps (ii) and (iii) to 30°C to 40°C and the temperature in step (iii) to 130°C to 160°C. These amendments are supported by the teaching in the disclosure at page 8 lines 5 to 10. Additionally, the hold up time in step (ii) has been limited to from 10 to 40 seconds. This is based upon original claim 8. As a result of this amendment claims 3, 7, and 8 have been cancelled and the dependencies of claims 4 and 9 have been amended to depend from claims 2 and 6 respectively.

It is respectfully submitted the revised claims add no new subject matter to the specification nor will they necessitate any further search on the part of the examiner. It is respectfully submitted the amended claims are in good order for entry into the application and the same is respectfully solicited.

The examiner raised a number of formal objections to claim 1. Applicants have made the amendments suggested by the examiner. It is respectfully submitted the amended claims meet the requirements of 35 U.S.C. §112

The examiner rejected the claims 1 through 21 formerly on file pursuant to 35 U.S.C. §103 in view of United States Patent 5,589,555 issued December 31, 1996 to Zboril et al. Applicants respectfully traverse the examiner's objection.

The application of 35 U.S.C. §103 to the issue of patentability has been considered by the Supreme Court of the United States in Graham v. John Deere 148

USPQ 459. The Supreme Court held that 35 U.S.C. §103 requires a three-pronged inquiry. It is necessary to:

- (i) determine the knowledge disclosed in the prior art;
- (ii) determine the differences between the teaching of the prior art and the claims at issue; and
- (iii) resolve the differences between the teaching of the prior art and the claims in question on the level of the ordinary skill in the art field.

On a fair reading Zboril teaches two different catalyst systems. One catalyst comprises the components of the present invention (e.g. no vanadium). That catalyst system is prepared by mixing all the catalyst components in line at a temperature of less than 30°C (Col. 2 line 63 and Examples I and II). Clearly this teaches against any type or step of heating the catalyst components and is against the subject matter of the present claims. Examples I and II of Zboril illustrate this method and were carried out using in line mixing with no heating of the components prior or subsequent to any mixing step (Col. 6 line 20; Col. 7 line 12)

The second method comprises mixing the titanium tetrahalide with the organoaluminum compound (e.g. trialkyl aluminum or dialkyl aluminum halide at a temperature of less than 30°C, heating the resultant admixture to a temperature of 150-300°C for a period of 5 seconds to 60 minutes; the preferred halide is chloride (Col. 2 lines 54-60). This method is illustrated in Examples III, IV, and V. While the text at Col. 2 lines 54-60 is unclear how the additional components are added the examples disclose this. From the teaching at col. 2 and the examples the dialkyl magnesium

compound and the reactive halide are not present in this second catalyst composition. The second composition teaches away from the compositions and conditions of the present invention.

Accordingly the first catalyst of Zboril teaches comparable components of the present invention but no heat treatment and the second catalyst of Zboril fails to teach the components of the present invention. Accordingly given the test in *Graham v. John Deere* it is respectfully submitted one of ordinary skill in the art would not derive the subject matter of the present claims based on the teaching of Zboril without exercising invention.

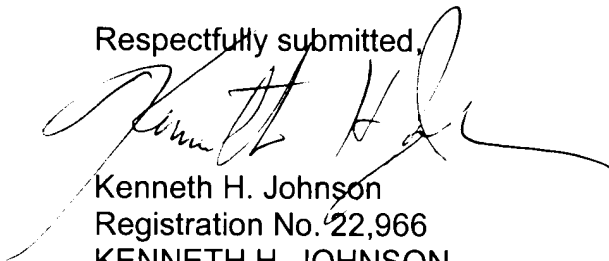
The Examiner references the passage at the end of Example II to suggest this teaches heating the catalyst. Applicants respectfully traverse the examiner's argument. In Examples I and II, the catalyst is not heated (see above comments). The high temperature refers to the polymerization temperature (see Col. 7 in Table II). Comparing Columns 6 and 8 of Table 2 the conclusion is justified as the ratio of t-butanol to  $Al^3$  increases the productivity (Kp) increases. This teaching would not suggest to one of ordinary skill in the art to heat the catalyst components (as they are not heated in the Example). In short it teaches away from the present invention.

The examiner has also referred to the case law. In particular, the examiner refers to *In re Burhans*, 154 F.2d 690, 69 USPQ (CCPA 1946). The case law is predicated upon the absence of an unexpected result. The control experiments of the present application follow the teachings of Zboril's first catalyst system prepared using the components of the present invention without heating. Table 1 at page 17 clearly

shows the subject matter of the revised claims (e.g. hold up times not more than 40 seconds) produce catalyst having significantly higher activity than that of Zboril.

In view of the foregoing it is respectfully submitted the revised claims demonstrate inventive subject matter over Zboril. Reconsideration of the claims is respectfully solicited.

Respectfully submitted,



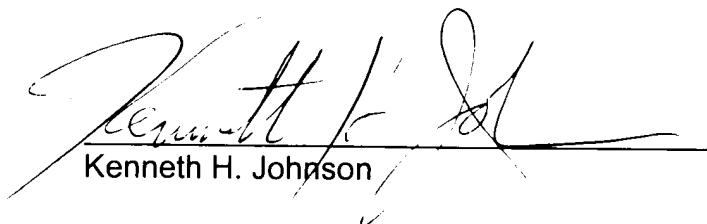
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